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10/600,391

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EXAMINER

NAGPAUL, JYOTI

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

12/11/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/600,391

Applicant(s)

NICKEL ET AL.

Examiner

JYOTI NAGPAUL

Art Unit

1797

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2,4-11,13-16,18-25, 28, 26 and 27 is/are pending in the application.
- 4a) Of the above claim(s) 18-25 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,4-11,13-16,26 and 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Newly submitted claim 28 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Inventions I (Claims 2-11, 13-16, 26-27) and II (Claims 18-25, 28) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process, such as a process that doesn't require winding the plurality of ceramic capillaries and one or film strips into at least one bundle.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 18-25 and 28 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Response to Amendment***

Rejection of Claims 1, 4-5, 8-11 and 26 as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) has been modified in light of applicants' amendments.

Rejection of Claims 2, 6-7 and 12 as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) as applied to claim 5 above, and further in view of Taketomo has been modified in light of applicants' amendments.

Rejection of Claims 13-14 as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) as applied to claim 1 above, and further in view of Shay (US 4310607) has been modified in light of applicants' amendments.

Rejection of Claim 15 as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) as applied to claim 1 above, and further in view of Bellhouse (US 6217764) has been modified in light of applicants' amendments.

Rejection of Claim 16 as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) as applied to claim 1 above, and further in view of Dobo (US 4268278) has been modified in light of applicants' amendments.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 4-5, 8-11 and 26-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361).

As for claims 4-5 and 8-11, Kalthod teaches a fluid separation module comprising at least one bundle of ceramic capillaries (27). (See Col. 9, Lines 9-12) The capillaries (27) having an external diameter in the range of 0.3 mm to 10mm and internal diameter in the range of 0.1 mm to 8mm. (See Col. 5, Lines 60-64) Kalthod further teaches

Kalthod fails to teach a distance is established between the capillaries by attaching film strips to the capillaries while the capillaries are parallel, winding the capillaries into a bundle and joining the ending of the bundle of capillaries in an end plate through which their ending pass at a defined distance from each other. The film strips define a distance between the individual capillaries in the bundle and also form baffle plates within the bundle.

McGinnis teaches the making of a separation module. McGinnis teaches capillaries (14) that are laid side by side in a spaced apart relationship. The capillaries are wound into a bundle and then joined at the ending of the bundle of capillaries (14) in an end plate/perforated plates (19). (See Figures 1 and 9-11) (See Col. 14, Lines 12-15)

The fabrication of capillary bundles in the method described by McGinnis is conventionally known in the art. Kalthod further discloses introducing the filament in a filament winding machine and then into a mandrel as it is rotated. (See Col. 5, Lines 6-8) Thus it would have been obvious to one having ordinary skill in the art to fabricate the device of Kalthod as described in McGinnis to achieve the predictable results of proper alignment of the hollow fibers.

Kalthod and McGinnis both fail to teach attaching film strips while the capillaries are parallel and further, the film strips define a distance between the individual capillaries in the bundle and also form baffle plates within the bundle.

Prasad teaches separation module comprising baffle plates (3a) for maintaining the distance between the individual capillaries to promote radial flow of fluids through the hollow fiber bundle. (See Col. 2, Lines 28-30)

Thus it would have been obvious to one having ordinary skill in the art to provide the device of Kalthod in view of McGinnis with baffle plates while the capillaries are parallel to achieve the predictable results of promoting radial flow of fluids through the hollow fiber bundle.

5. **Claims 2, 6-7 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) as applied to claim 5 above, and further in view of Taketomo.

Refer above for the teachings of Kalthod, McGinnis and Prasad.

Kalthod, McGinnis and Prasad fail to teach the distance is less than 3 mm.

Taketomo teaches a separation module. The module comprises a sheet/spacers (26) at several points along the length of the capillaries so that the individual capillaries are spaced apart by a small distance. (See Figure 10 and Col. 1, Lines 50-55) The module further teaches the bottom of the capillaries is securely embedded in a support/end plate (29) for “close packing” in order to provide a sufficient space between each capillary and thus ensuring a gas passage from the outside to the inside of the capillary. (See Col. 2, Lines 5-20)

It would have been obvious to a person of ordinary skill in the art to provide end plates as disclosed in Taketomo to provide a sufficient space between each capillary and thus ensuring a gas passage from the outside to the inside of the capillary.

6. **Claims 13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) as applied to claim 27 above, and further in view of Shay (US 4310607).

Refer above for the teachings of Kalthod, McGinnis and Prasad.

Kalthod, McGinnis and Prasad fail to teach the housing consists of stainless steel.

Shay teaches a separator bundle comprising a bundle of capillary fibers. Shay further teaches a stainless steel housing (34) that encloses the bundle of capillary fibers.

It would have been obvious to a person of ordinary skill in the art to modify the device of Kalthod in view of McGinnis to provide a stainless steel housing enclosing the bundle in order to use the separator module in a battery cell as disclosed in Shay.

7. **Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) as applied to claim 27 above, and further in view of Bellhouse (US 6217764).

Refer above for the teachings of Kalthod, McGinnis and Prasad.

Kalthod, McGinnis and Prasad fail to teach a ceramic housing.

Bellhouse teaches filtration module. Bellhouse teaches a filter comprising a large number of parallel capillaries in a highly porous block of support material/housing. (See Col. 1, Lines 27-29)

It would have been obvious to a person of ordinary skill in the art to modify the device of Kalthod in view of McGinnis to provide a ceramic housing as disclosed in Bellhouse in order ensure radial mixing and hence optimum filtration.



8. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kalthod (US 5,779,897) in view of McGinnis (US 3690465) and further in view of Prasad (US 5352361) as applied to claim 27 above, and further in view of Dobo (US 4268278).

Refer above for the teachings of Kalthod, McGinnis and Prasad.

Kalthod, McGinnis and Prasad fail to teach a separation module comprising a catalyst.

Dobo teaches fluid separation module comprising hollow fibers. The separation module further comprising a catalyst. (See Col. 1, Lines 1-65)

It would have been obvious to a person of ordinary skill in the art to modify the device of Kalthod in view of McGinnis to provide a separation module with a catalyst in order to obtain desired reactions and enhance separation as disclosed in Dobo.

### ***Response to Arguments***

9. Applicant's arguments filed on August 28, 2008 have been fully considered but they are not persuasive. Applicants believe that the method of McGinnis would cause the breakage of the capillaries because the tension applied on the capillaries. Examiner respectfully disagrees. This is clear speculation and applicants' have not provided any substantial evidence as to why it will not work. Applicants further argue that neither reference cited above in the above rejection disclose a plurality of ceramic capillaries arranged in parallel and joined together by one or more film strips pressed at least partially around and connecting adjacent capillaries. Examiner has relied on the teachings of Prasad to teach baffle plates that are equivalent to the claimed film strips to teach where the film strips/baffle plates pressed at least partially around as shown in

Figures 3 and 4. Prasad teaches the array being wound upon an axis with is substantially parallel to the hollow fibers and the sealing means/baffle plates are disc shaped and is pressed at least partially around and connecting adjacent capillaries.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JYOTI NAGPAUL whose telephone number is (571)272-1273. The examiner can normally be reached on Monday thru Friday (10:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JN

/Jill Warden/  
Supervisory Patent Examiner, Art Unit 1797